Delaware
Forest Health Highlights

January 2001

The Resource

Delaware's forests presently cover slightly more than one-third of a million acres; whereas, 26 years ago 380,684 acres were forested. Delaware has experienced a rapid conversion of forests and agricultural lands to residential and other urban uses since 1984. The College of Agriculture and Natural Resources at the University of Delaware completed a very detailed analysis of land use in Delaware in 1999 (for details refer to Forest Fragmentation later in this report). In summary, forested acreage was reduced by 9 percent between 1984 and 1992, and this reduction continued at this high rate from 1992 to 1997.

Forest Health Monitoring

Permanent Plots — Twenty-two permanent Forest Health Monitoring (FHM) plots were installed on an intensified grid system throughout Delaware during 2000. Plot locations for these FHM plots coincide with the USDA, NEFES, and Forest Inventory and Analysis (FIA) plots following the consolidation of FHM within FIA. The data collected on these 22 plots during 2000 followed the standard FHM data measurements, as well as a complete vegetation survey including lichen sampling. The FHM data will reveal the number and abundance of native and exotic plants associated with Delaware's forests.

FHM Herpetological Monitoring — Monitoring terrestrial woodland salamander populations three or four times a year, in conjunction with traditional forestry measurements at a site, provide a more complete assessment of forest ecosystem health. Ten state FHM plots were established in 1998. On each plot, a series of 64 wood-cover boards (1" x 8" x 8" rough-cut red oak) were set out in February in a 350 foot square (2.81 acres) with boards spaced on a 50-foot grid. The boards were checked for salamanders in April, May, and June. During the first monitoring year in 1999, the number of salamanders encountered per site ranged from a high of 56 over three visits to a low of two. During the second monitoring year in 2000, the number of salamanders utilizing the boards increased by about 50 percent overall, an increase that is probably attributable to a "settling in" of the boards at each site. The Delaware survey is being conducted in cooperation with the North American Amphibian Monitoring Program.

Forest Pest Issues

Gypsy Moth — For the fourth year in a row, Delaware forests had no detectable gypsy moth defoliation based on an aerial survey of the entire State conducted in late June 2000. Not surprisingly, subsequent egg mass surveys in the fall resulted in low counts throughout the State. None of the 37,951 acres surveyed for egg masses qualified for a FY2001 suppression program.

Southern Pine Beetle — The southern pine beetle (SPB) is the most damaging pest of pines in the State, and has the potential to kill healthy trees on many forested acres. An aerial survey was flown in January 2000 over the entire southern half of the State to search for active SPB infestations. No significant SPB damage was observed.

Urban Forest Health Issues

Dutch Elm Disease — The Delaware Department of Agriculture (DDA) Forest Service is currently working with Gary Schwetz of the Delaware Center for Horticulture to mitigate a Dutch elm disease problem. The problem resides in several neighborhoods within Wilmington, where high concentrations of large American elms exist. An intensive tree-by-tree survey began in 1999 and continued in 2000. Past management practices have enabled many trees to withstand the periodic waves of this destructive disease. Continued intensive surveys are planned. Recommendations will likely involve removal of hazardous, dead and dying trees, pruning trees as needed, and injection for trees showing slight signs of infection (10 percent or less crown dieback).

Sycamore Canker Stain — The DDA Forest Service has been investigating a problem identified as canker stain, *Ceratocystis fimbriata*, attacking sycamores in Wilmington. Large sycamores lining the north end of Baynard Boulevard have died over the past nine years. The work to mitigate this problem has been done in cooperation with the 9th Ward Civic Association.

Lack of Urban Tree Diversity — A 1998 survey of our urban and community street tree resource included 1,715 trees and yielded some intriguing information: 78 percent were in good condition; 50 percent were comprised of only five species (four of which were species of maple); 60 percent were causing sidewalk damage, which raises the issue of pedestrian safety and well-being; 33 percent were in conflict with overhead power lines and represent potential threats for localized power-outages during stormy weather.

Forest Health Concerns

Weather — After the severe drought of 1999, Delaware experienced an above average wet spring in 2000. Although this moisture contributed to fewer forest health problems overall, the oak forests of Delaware appeared to experience significant forest health problems in 2000. Many red and white oak trees in particular showed symptoms of stress by refoliating early in the year, thereby depleting their root starch reserves.

Exotic Species — The DDA Forest Service is increasingly concerned with exotic species (animals, plants, and diseases) and their potential threat to Delaware's forest resource. **The Asian longhorned beetle**, *Anoplophora glabripennis*, is of particular concern, due to the heavy concentration of preferred host species (e.g., maples) in Delaware's urban and community forests. **The pine shoot beetle**, *Tomicus piniperda*, was not detected in Delaware following the completion in September 2000 of a survey for this pest in 94 Christmas tree plantations. Because other **exotic bark beetles** have the potential to adversely affect Delaware's forest resources, a baseline survey began in 1999 to document what bark beetles species exist in the State. This work continued in 2000 with the completion of specimen identification and preparation of manuscript for an entomological journal. The incidence of **dogwood anthracnose** continues to be prevalent in all three Delaware counties. Dead and dying dogwood trees are quite noticeable in many areas of the State.

Delaware Invasive Species Council (DISC) — There is a growing concern over the introduction and establishment of any non-native, invasive species into Delaware in particular, and throughout the United States in general. If conditions are favorable, some introduced species rapidly spread and disrupt native ecosystems, often causing irreparable harm to our native plant and animal communities. In response to a growing need to effectively address issues involving invasive and exotic species, The Delaware Invasive Species Council (DISC) was recently organized by the DDA Plant Industries Section. The Council, the first of its kind in the United States, is involved with many aspects of invasive, exotic species—promoting public awareness, facilitating an exchange of information on exotic and invasive pest species, encouraging the use of native species, supporting and conducting research, and serving as an advisory panel for various public and private interests concerned with non-native, invasive species.

Forest Fragmentation

The Spatial Analysis Lab, College of Agriculture and Natural Resources, University of Delaware completed a very detailed analysis of land use in Delaware in 1999. The analysis documented with satellite imagery the rapid conversion of forest and agricultural lands to residential and other urban uses in all three counties during two periods, 1984 to 1992 and 1992 to 1997. During the last period, Sussex County had the largest gross loss of forests (-17,000 acres) in Delaware. This loss resulted from the largest percentage gains in residential acreage and in other urban uses in the State. Kent County had the largest countywide percent loss of forest acreage (-12 percent). New Castle County, below the C&D Canal, experienced a 16 percent net loss of forest acreage from the most rapid localized rate of residential development in the State.

For More Information

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